Algebra II Test Chapter 11 Mr. Pleacher Name _____

I. Multiple Choice

_____ 1. By what should you multiply both sides of the equation to solve

$$\frac{3x}{x^2-9}-\frac{5}{x+3}=\frac{1}{2x-6}\ ?$$

(A) $2(x-3)(x+3)$ (B) x + 3 (C) $2(x+3)$ (D) x^2-9

_____ 2. Which represents an inverse variation?

(A) y = 3xz (B) y = 12x (C) $y=\frac{5}{x}$ (D) $y=\frac{x}{5}$

_____ 3. Which is a point of discontinuity in the graph of $f(x)=\frac{x^2-121}{x-11}$?

(A) (11, 0) (B) (11, 22) (C) (–11, –22) (D) there are none

_____ 4. Suppose p varies inversely as q. If $p=\frac{1}{10}$ when $q = 10$, determine q when $p = 5$.

(A) 20 (B) $\frac{1}{5}$ (C) $\frac{1}{2}$ (D) none of these

_____ 5. Suppose n varies jointly as e and d. If $n = 120$ when $e = 5$ and $d = 6$, determine d when $n = 96$ and $e = 3$.

(A) 8 (B) 16 (C) 12 (D) 1152

_____ 6. Which represents a vertical asymptote of $y=\frac{5}{x+3}$?

(A) x = 3 (B) y = 0 (C) y = 5 (D) x = –3

_____ 7. Suppose y varies directly as x. If $x = 6$ when $y = 8$, determine y when $x = 4$.

(A) 3 (B) $\frac{3}{4}$ (C) $\frac{4}{3}$ (D) $\frac{16}{3}$

II. Simplify each rational expression, stating any **restrictions** on the variables.

_____ 8. $\frac{6u^3v^2w}{11u^2w^2}$

_____ 9. $\frac{d^2-81d}{d-81}$

_____ 10. $\frac{x-9}{x^2-6x-27}$

III. Perform the indicated operation and simplify.

_____ 11. $\frac{x^2+7x}{x^2-49} \bullet \frac{x^2+4x-21}{x^2-3x}$

_____ 12. $\frac{4f-3}{4f+3} \div \frac{5f-1}{1-5f}$

_____ 13. $\frac{x^3-2x^2-63x}{x^2-49} \div \frac{x^2-81}{x^2-7x}$

_____ 14. $\frac{5y+1}{2y+6} + \frac{y+4}{5y+15}$

_____ 15. $\frac{9}{5x} - \frac{1}{6x}$

_____ 16. $\frac{2z+1}{z-5} - \frac{4}{z^2-3z-10}$

IV. Simplify

_____ 17. $\dfrac{\frac{3}{a}+d}{5}$

_____ 18. $\dfrac{\frac{6}{a}-\frac{5}{b}}{\frac{1}{2a}-\frac{1}{2b}}$

_____ 19. $\dfrac{\frac{2k}{k^2+4k+3}}{\frac{1}{k+3}+\frac{2}{k+1}}$

V. Solve and Check.

_____ 20. $\frac{7}{6x}+\frac{3}{x}=\frac{5}{6}$

_____ 21. $\frac{8}{p+3}+\frac{8}{p-3}=-2$

_____ 22. $\frac{1}{x-5}=\frac{6}{x^2-25}-\frac{1}{x+5}$

VI. Word Problem

_____ 23. The velocity of a river is 2.5 miles per hour. Moving with the current, a boat can travel 15 miles in the same amount of time that it would take to go 5 miles moving against the current. Determine the boat's rate in still water.